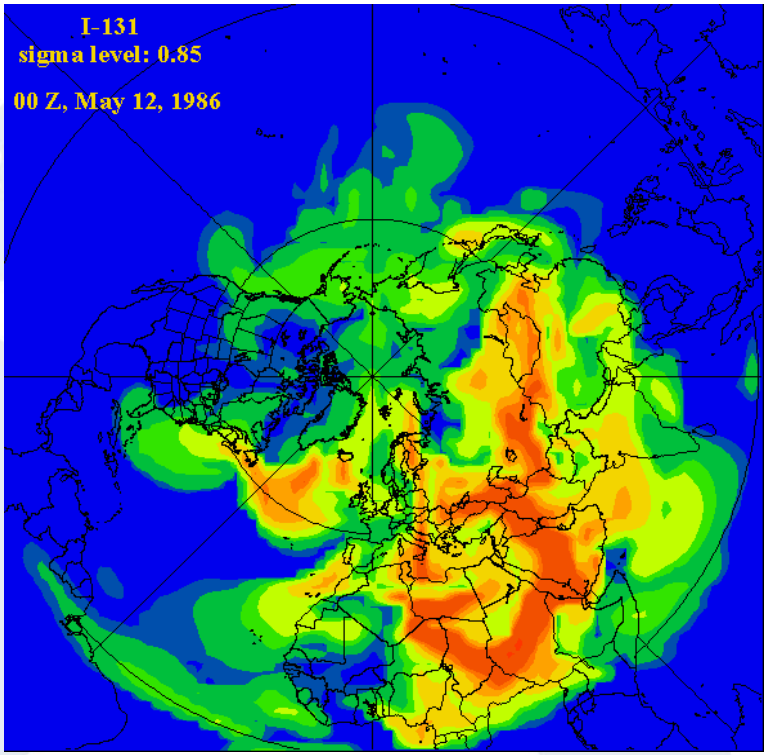
POLIMASTER
Global Leadership in Radiation Detection & Measurement

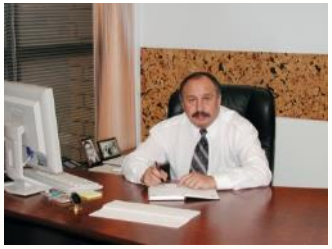


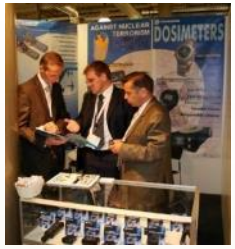



POLIMASTER

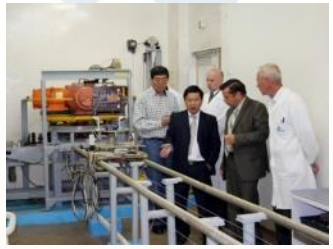
- Founded in 1992, incorporating experience in design and manufacture of radiation detectors for aerospace industry and military in Soviet Union
- More than 1 million detectors designed and manufactured after Chernobyl NPP accident
- 100% private company
- About 170 employees around the world











Corporate structure

- Offices:
  - Minsk, Belarus
  - Vilnius, Lithuania
  - Arlington, VA, USA
  - Japan - 2012
- Manufacturing facilities in:
  - Belarus and Russia
  - Europe (Lithuania)
  - USA
  - Southeast Asia
- Distribution network includes:
  - 64 dealers in 42 countries

Global sales structure

Polimaster's distribution network includes 64 dealers in 42 countries

Polimaster equipment at major international sporting events

- XXVIII Olympic Games, Athens, 2004
- XV Pan American Games, Rio de Janeiro, 2007
- XXIX Olympic Games, Beijing, 2008
- FIFA Soccer World Cup, South Africa, 2010






Polimaster is a primary supplier of gamma-neutron PRDs in USA

In 2002 Polimaster began marketing Personal Radiation Detectors (PRDs) to US Law Enforcement Agencies:

- ✓ US Coast Guard
- ✓ Police Department
- ✓ FBI, Secret Service
- ✓ NSA

also

- ✓ FedEx, UPS, US Postal Service, and many others.

The most popular model **PM1703M/GN** has sold in excess of **20,000 units**





International recognition

- Polimaster radiation detection products are certified by the International Atomic Energy Agency (IAEA)
- Polimaster products comply with ANSI 42.XX, ISO, IEC and other standards
- Polimaster has received numerous awards in recognition of our products' high quality and dependability





Polimaster operations include:

Sales

Licensing

POLIMASTER

Service

Manufacturing

Marketing

R&D

- Research & Development
- Manufacturing & Licensing
- Marketing
- Distribution & Sales
- Service & Support

Technologies

Electronic Personal Dosimeters ANSI 42.20	Personal Radiation Detectors ANSI 42.32 42.33 Spectrosco-pic Personal Radiation Detectors ANSI -//- 42.48	Hand-held Instruments for Detecting and Identifying Radionuclides ANSI 42.34	Radiation Portal Monitors ANSI 42.35 Spectroscopic RPMs ANSI 42.38 Mobile & Transportable Radiation Monitors ANSI 42.43	Personal Radiation Detectors ANSI 42.32 42.33 Chemical, Explosives and Drug detection	Systems Integration Advanced Network Solutions

Electronic dosimeters

This light-weight and low-cost multipurpose dosimeter **PM1203M** was designed for continuous 24-hour-a-day measurement of the dose and dose rate. The unit is highly sensitive to minute (low) levels of radiation and can register the slightest changes in the natural radiation background. This instrument gives professionals and non-professionals alike the necessary information to protect themselves from radiation exposure.

The **PM1621/A/M/MA** are professional energy-compensated dosimeters. They are designed to measure the personal dose and personal dose rate of both gamma and X-ray radiation in a wide energy range from the natural radiation background up to 1Sv/h.
Recommended for professionals who work with or around radioactive materials to protect them from accidental and unknown radiation exposure.

Wrist watch dosimeter

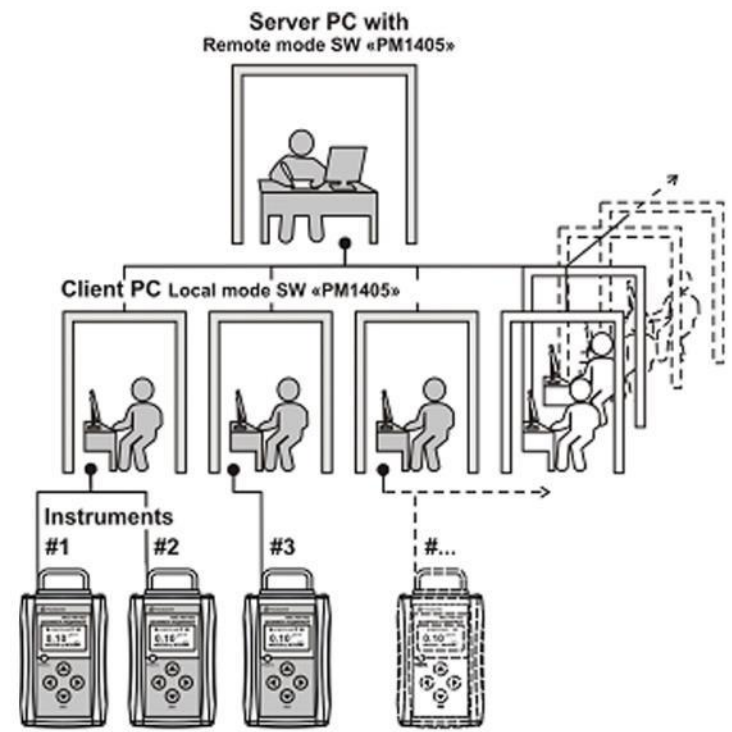
The **PM1208/M** Wrist Gamma Indicators are instruments beyond compare. Designed to monitor radiation levels of the environment and irradiation level of individuals. The PM1208/M provides continuous 24-hour-a-day radiation monitoring and indication of the ambient dose rate and ambient dose. The gamma indicator alerts users to hazardous situations with an audible alarm.

Dosimeters for military and emergency applications

The **PM1603A/B and PM1604A/B** are compact dosimeters designed for radiation environment monitoring and dose accounting. They are capable of accurately measuring dose and dose rate of gamma radiation in a wide energy range (up to 5-10 Sv/h) from the natural background level.
Recommended for professionals who work with or around radioactive materials to protect them from accidental and unknown radiation exposure.

Measuring beta and alpha contamination

The **PM1405** is a compact multifunction survey meter, capable of measuring X-ray, gamma and beta radiation.



- Simultaneous and selective measurement of gamma and beta radiation intensity;
- Audible and visual alarms;
- Non-volatile memory;
- PC communication via USB interface and the ability to network instrument, with automatic data collection in a server-based centralized database;
- Indication of battery discharge level;
- Simple and intuitive user interface.

Pulse x-ray and gamma dosimeters: PM1610 product line

Professional personal dosimeter measures continuous and pulse X-ray and gamma radiation in the energy range of 20 keV–10 MeV. The **PM1610/A** dosimeters are recommended to protect professionals who work with or around X-ray or gamma radioactive materials. Possible areas of use include, but are not limited to: hospitals, mines, customs offices, nuclear stations, etc.

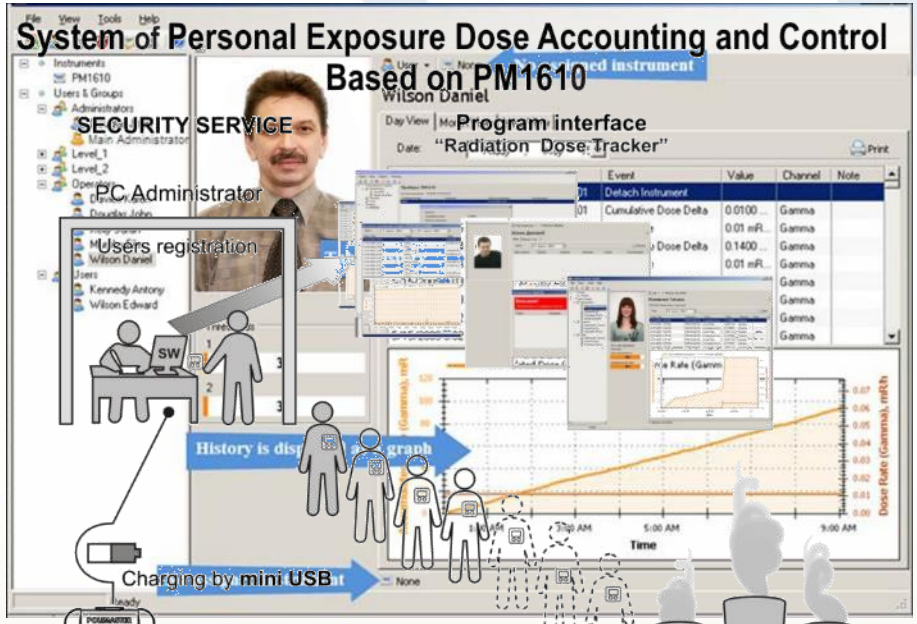
Personal Dose Tracker software enables serial connection of up to 100 personal dosimeters. Software enables information transfer by USB-protocol to a personal computer to analyze, process, and generate corresponding databases in a control center or an expert center.

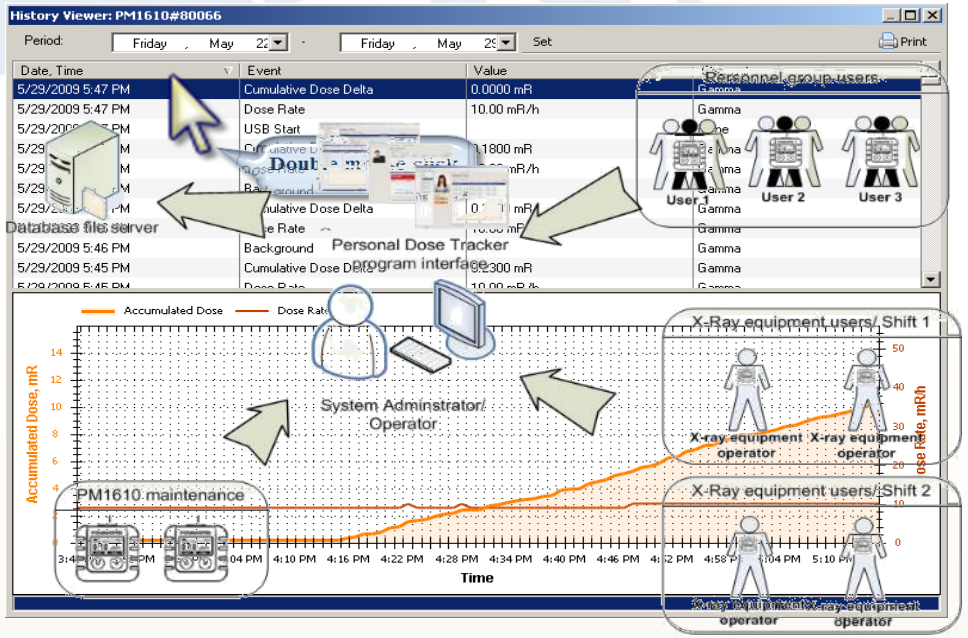
PM1610B simple use with AAA battery

- Measures X-ray dose (exposure);
- Measures continuous and pulse (from 1 msec) X-ray and gamma radiation;
- Alerts user via audio, visual and vibration alarms when preset thresholds are exceeded;
- Records manually or automatically up to 4,000 events in the instrument's non-volatile memory;
- Communicates with a PC via USB connection, with simultaneous battery charging;
- Low battery warning;
- User-friendly interface with two button operation.

Personnel dose tracking and accounting software for all Polimaster dosimeters

- Acute dose information for personnel and operators
- Complements any radiation security monitoring system
- Flexibility for precise configuration and user setup
- Data stored in database



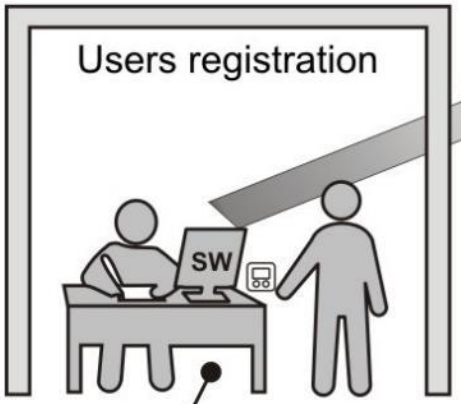


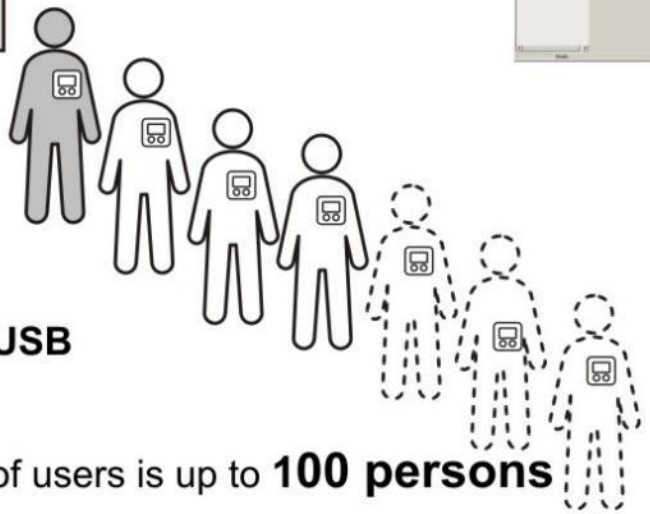
System of Personal Exposure Dose Accounting and Control Based on PM1610

SECURITY SERVICE

Program interface
“Radiation Dose Tracker”

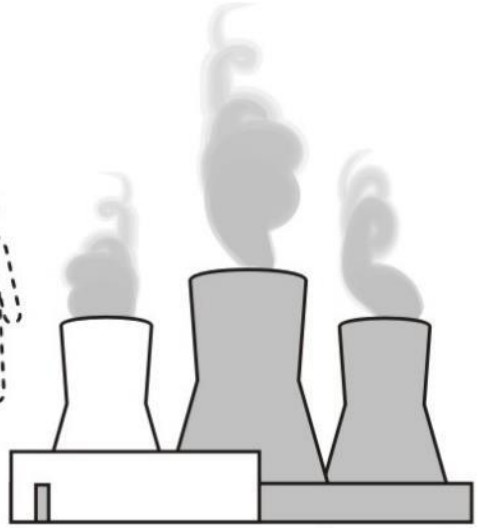
PC Administrator





Charging by **mini USB**

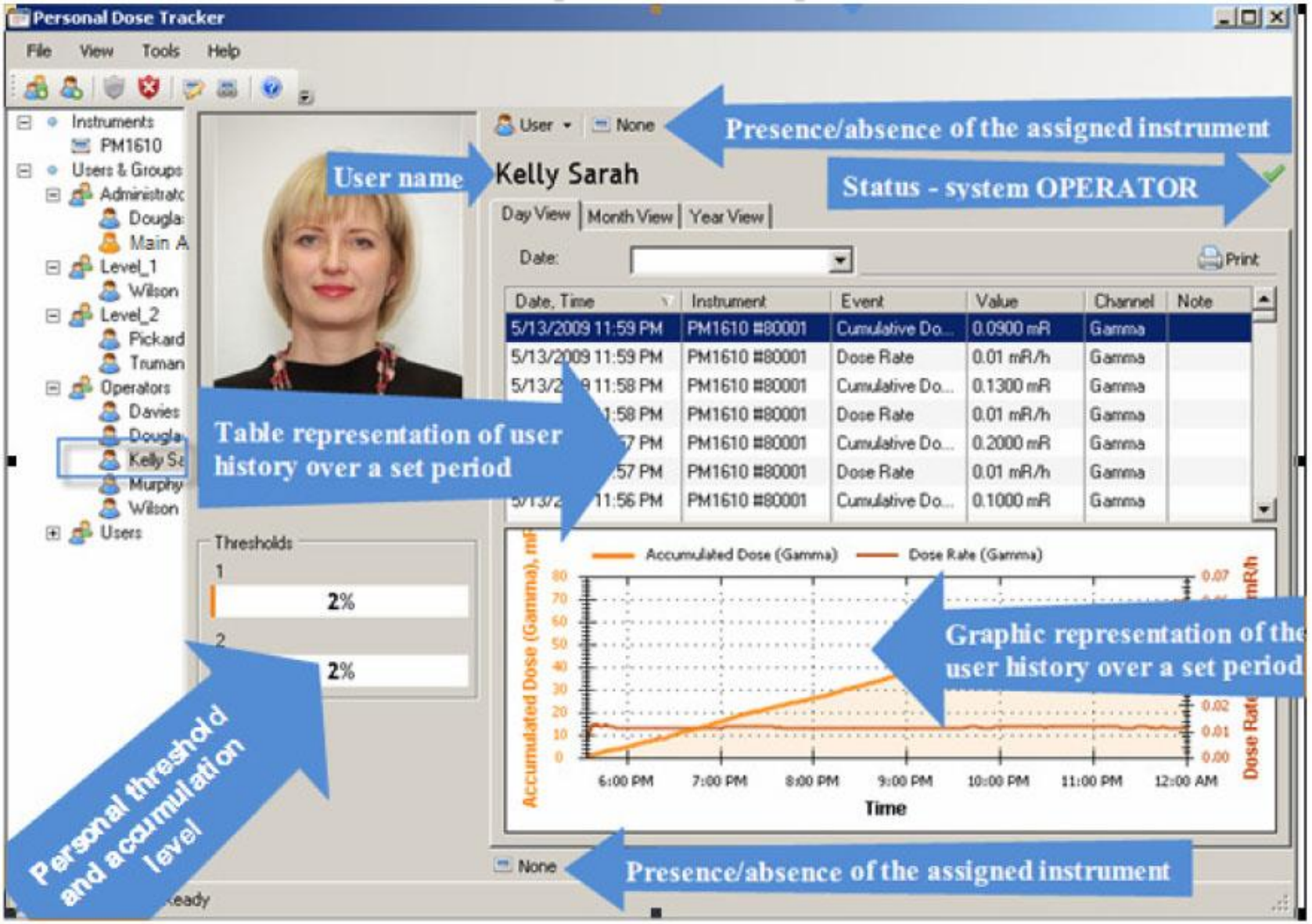
Quantity of users is up to **100 persons**



Dangerous area of operation

Software enables reading out history,
assigning/detaching only **one** instrument at a time.

User exposure profile



Personal radiation detectors: PM1703M/GN/MA/GNA/MB/GNB

The **PM1703M/GN** series—the first of its kind in the world—is a new generation of gamma/gamma neutron pagers capable of detecting even the smallest amounts of radioactive and nuclear materials, including those in weapons.

PM1703MA/GNA models meet the requirements of ANSI N42.32 "American National Standard Performance Criteria for Alarming Personal Radiation Detectors for Homeland Security."

PM1703MB/GNB models are equipped with Bluetooth so the user can stay a safe distance from the radiation source and operate the instrument remotely. Data exchange is performed between the search monitor and a Pocket PC or a smartphone via the radio channel.

These instruments are designed for use by customs agents, border guards, and emergency and law enforcement services whose duties include counteracting illicit trafficking of radioactive and nuclear materials and efforts to use such materials for terrorism.

Personal radiation detectors: PM1703MO-1/A/B

The **PM1703MO-1/A/B** instruments combine features of both Personal Radiation Detector (PRD) or Spectroscopic Personal Radiation Detector (SPRD) and Dosimeter in one housing. Each instrument is equipped with two independent detection modules: a compact GM tube detector, which allows measurement of dose rate of gamma radiation in the wide energy range, and a highly sensitive CsI(Tl) scintillation detector that enables detection of radioactive and nuclear materials

PM1703MO-1A has a USB connection and **PM1703MO-1B** has Bluetooth to transmit the gross counts and accumulated spectra to an external computing device for on-site gamma radionuclide identification.
Bluetooth allows the user to stay a safe distance from the radiation source while the SPRD is in operation, providing an additional degree of user protection from radiation exposure.

Personal radiation detectors: PM1401M/GN/K/K-01/GNB/MB/K-3

The **PM1401** series (M/GN, MA/GN, MB, GNB) is a family of highly sensitive gamma/gamma-neutron search monitors. They represent successful upgrades of the well-known pocket gamma monitor PM1401.
PM1401 detectors are ideally suited for operation in extreme climates and harsh environments that lack outdoor lighting.

The **PM1401K** is the first multipurpose pocket monitor in the world that performs all radiation control functions:

- detects, searches for, and locates alpha, beta, gamma, and neutron radiation sources
- measures the photon dose and the surface contamination factor
- alerts the user through audible and vibrating alarms
- stores data for up to 500 events
- transfers data via infrared or Bluetooth channels to a PC or iPAQ Pocket PC

Spectroscopic personal radiation detectors PM1704, PM1704M and PM1704GN

- Built-in CsI(Tl) spectroscopic detector
- Fast and reliable identification of isotopes
- Built-in Li^6(Eu) neutron detector (PM1704GN) and GM-detector (PM1704M)
- Stores up to 100 gamma spectra
- Wi-Fi, Bluetooth, GSM/GPRS wireless communication
- USB, RS232 – interfaces
- ANSI 42.32, 42.33, 42.XX compliance

Multipurpose monitors – PM1402M

The **PM1402** series is a family of highly sensitive alpha, beta, X-ray, gamma and neutron monitors.
PM1402 personal radiation detectors are ideally suited for operation in extreme climates and harsh environments that lack outdoor lighting.

The **PM1402M** is the first multipurpose monitor in the world that performs all radiation control functions:

- Detects, searches for and locates alpha, beta, gamma, and neutron radiation sources
- Measures the photon dose and the surface contamination factor
- Alerts the user through audible and vibrating alarms
- Stores data for up to 500 events
- Transfers data via the RS-232 to a PC or a pocket PC

Multipurpose monitor PM1403

Unique light-weight Multipurpose Hand Held Monitor has built-in spectroscopic detector and four external exchangeable smart probes designed for easy detection and location of alpha, beta, gamma and neutron radiation sources; precise measurement of alpha and beta surface contamination levels and gamma dose rate; and reliable identification of radioisotopes.

Instrument can be integrated into Nuclear Protection Network system NPNET™.

Radioisotope identifier - PM1410

PM1410 is a multipurpose hand-held radioisotope identifier designed for easy detection and location of gamma and neutron radiation sources, precise measurement of the gamma radiation dose rate and neutron radiation count rate, and reliable identification of gamma radionuclides.

Use with the external Alpha & Beta Radiation Detection Unit BDAB to detect and locate alpha and beta radiation sources and to measure alpha and beta surface contamination levels.

Instrument can be integrated into Nuclear Protection Network system NPNET™.

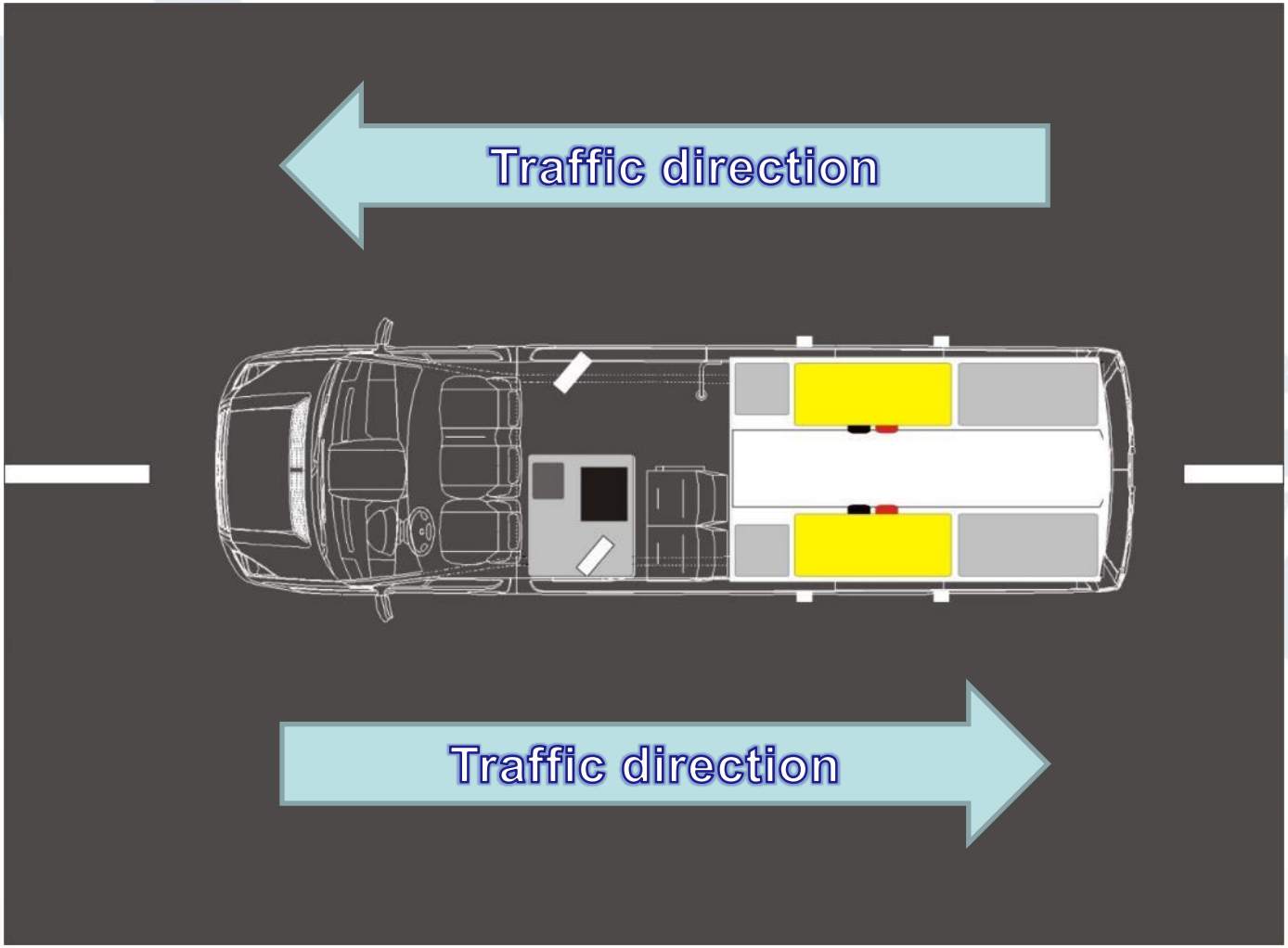
PM5000A portal monitors

Automated, fixed-installation **PM5000A** monitors are considered the best at preventing illicit trafficking of radioactive and nuclear materials to any controlled area, whether across a border or into a building. These fences are designed to monitor pedestrians, trucks, cars, trains, etc.

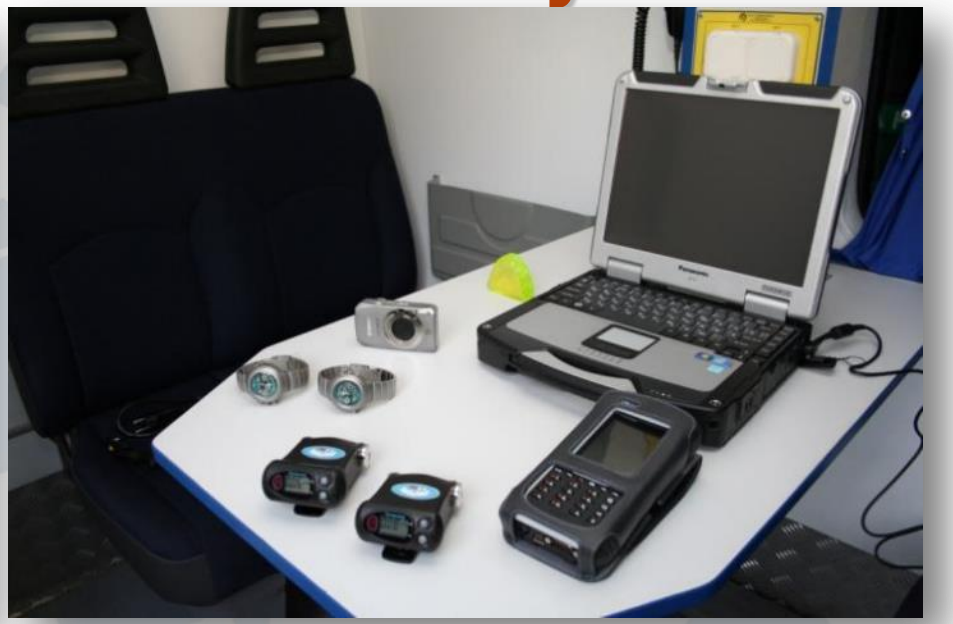
PM5000A monitors on EU border

Mobile radiation monitors

Single TRM deployment scheme



Mobile radiometric laboratory

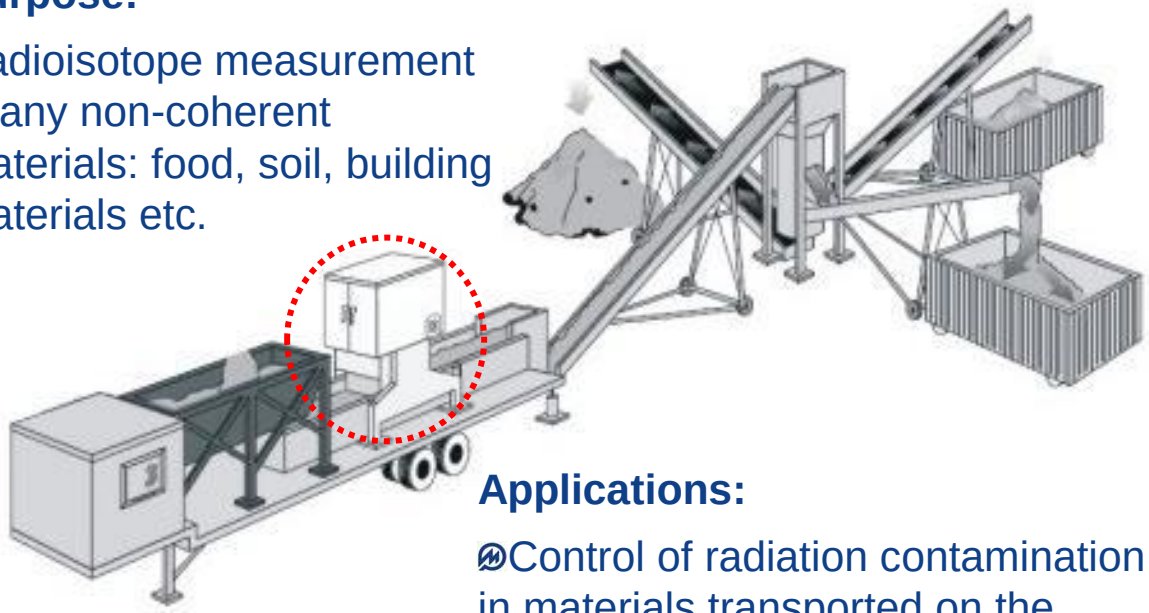


Food contamination control – Fukushima challenges 2011

Conveyer radiation monitor

Purpose:

Radioisotope measurement in any non-coherent materials: food, soil, building materials etc.



Applications:

- Control of radiation contamination in materials transported on the conveyer line, not packaged or packaged in bags and boxes of 25-50 kg
- Production and processing of agricultural products
- Production of bulk construction materials (sand, crushed stone, gravel, concrete block, cement, concrete)
- Building construction sites;
- Recycling of waste;
- Recycling of scrap metal;
- Mining (non-metallic materials)
- Disposal of low activity radioactive waste.

Food contamination meter PM1406

- Compact device for measuring radioactive contamination level in food including liquids.
- Control of household radiation in food is no possible for non-professionals.
- Detection of radiation in food is simple in both households and shops with the help of PM1406.
- Highly sensitive detector is designed for radionuclide activity measurement in food. Sampling requirements are minimal and simple. PM1406 is constructed as Marinelli Container.
- Plastic sample container (0.5 l. volume) perfectly covers and surrounds detector for accurate contamination reading. Optional lead box may be used to encapsulate plastic sample container to increase detector's sensitivity and reduce measuring time.

Food contamination meter PM1406

- USB connection (for desktop, netbook, and tablet)
- Special software permits control of detector, test result visualization, and measurement storage. Extremely user-friendly interface makes PM1406 a perfect solution for everyday use. No special computer skills or knowledge of radiation needed.

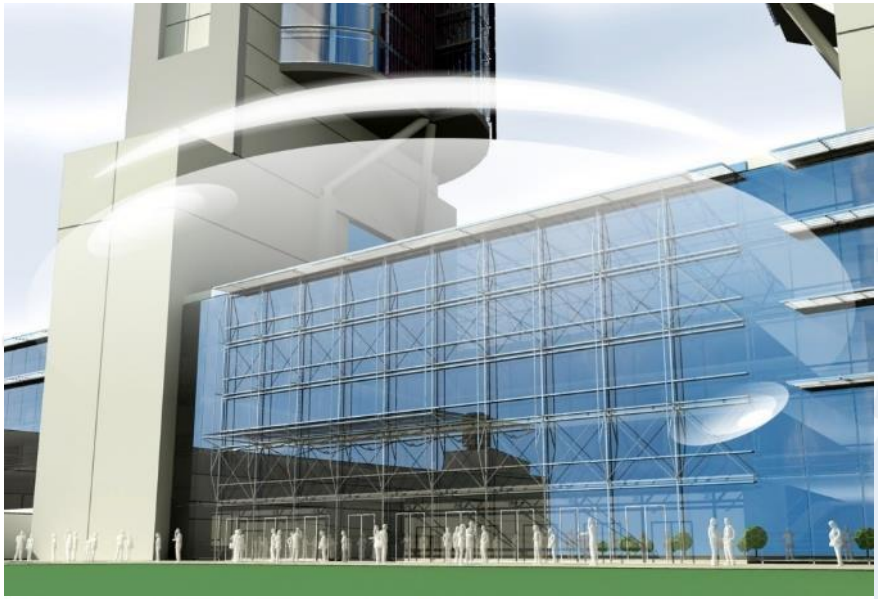
- Thanks to PM1406 software user can access food sample test results as well as food safety recommendations. All measurements are accurately compared to measurement standards in the pre-installed data library, which can easily be upgraded.
- All measurements can be saved for further screening and analysis using the software.
- Easy upgradable software is downloaded automatically during PM1406 user registration process via Internet.
- Flexible and easy customized setup allows user to create a library of frequently used food types. It's fast and easy to change language, measurement (Sv/R) parameters, etc.

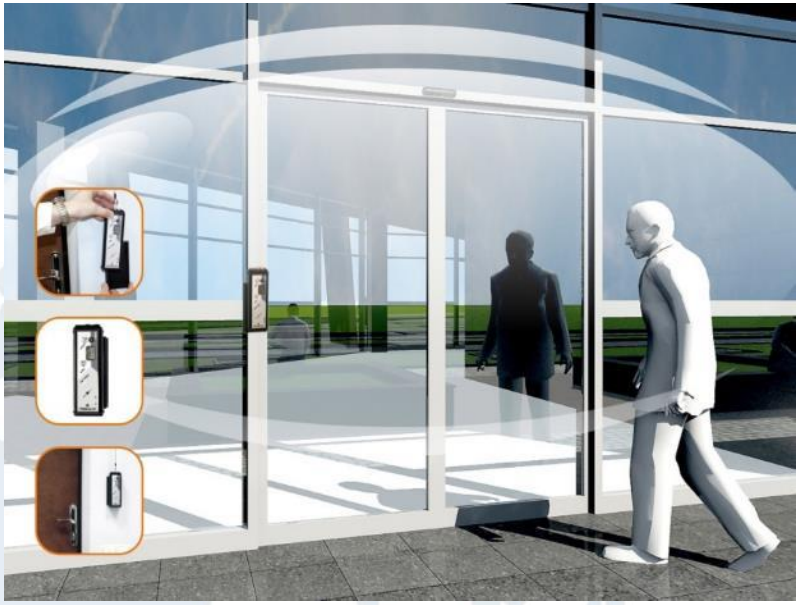
Critical infrastructure protection:

PM1710C/PM1710GNC and PM5000A System

Radiation portal monitors PM5000A for tracks and cars

- Widely used throughout Europe.
- Modular in design.
- Conveyer processing.
- Monitors foot & vehicular traffic.
- Self-contained video monitoring system.
- Requires minimal human intervention.





PM1710C/PM1710GNC model

- Advanced operation algorithm
- Rapid detection and localization of radioactive and nuclear materials
- Programmable by the user
- Custom energy windows (gamma radiation)

Combined CWA and gamma radiation detectors – PM2010M & PM2012M

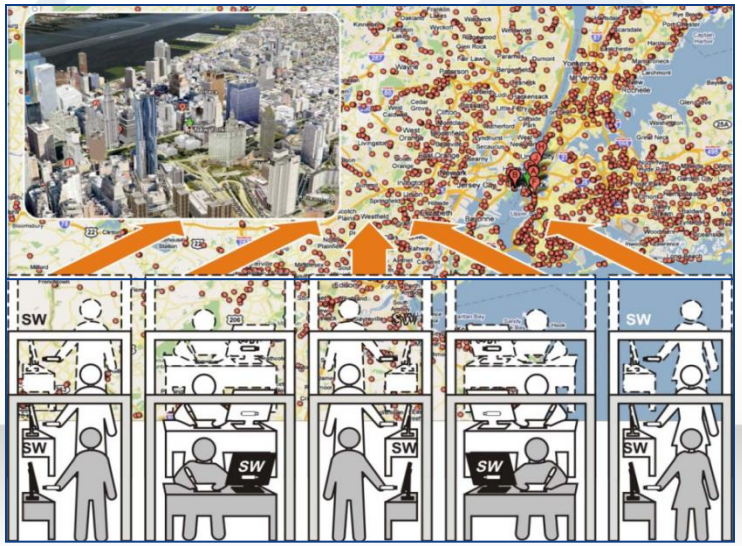
PM2010M and the newer **PM2012M** model are two-in-one instruments featuring both a chemical warfare **(CW)** agent detector and a gamma radiation detector in one case. The instrument can detect and differentiate between organophosphorous **(GA, GD, GB, VX, etc.)** and organoarsenic **(Lewisite, etc.)** compounds, monitor radiation background continuously and provide audible and visual alarms when the preset alarm thresholds are exceeded.

The **PM2010M and PM2012M** are invaluable for first responders, police officers, and customs and border patrol services in the day-to-day monitoring of public safety as well as in special **HAZMAT** operations.

Devices for public market - Radiation Detector PM1912 - RadFlash™II

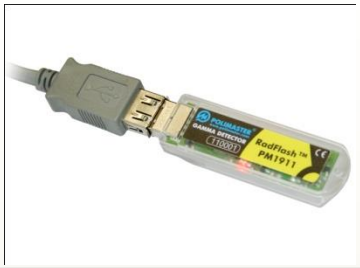
RadFlash is a unique, flash-drive style personal radiation safety device designed to help a wide range of users protect themselves and their relatives from radiation. RadFlash is easy to use and requires no specialized knowledge. With its simple "traffic light" logic, RadFlash is easily used, even by children.

The **Flash Radiation Monitor Software** allows the user to transfer data to the common unified database installed on the server. Both private and public radiometric data can be displayed on Google Maps. Each RadFlash user can monitor the radiation environment in a particular region in real time.



Devices for public market - Radiation detector PM1912 - RadFlash™II

- USB flash drive+ GM detector
- Ready for large-scale production
- Easy to use, networkable
- Several versions
  - USB only
  - Battery and alarm



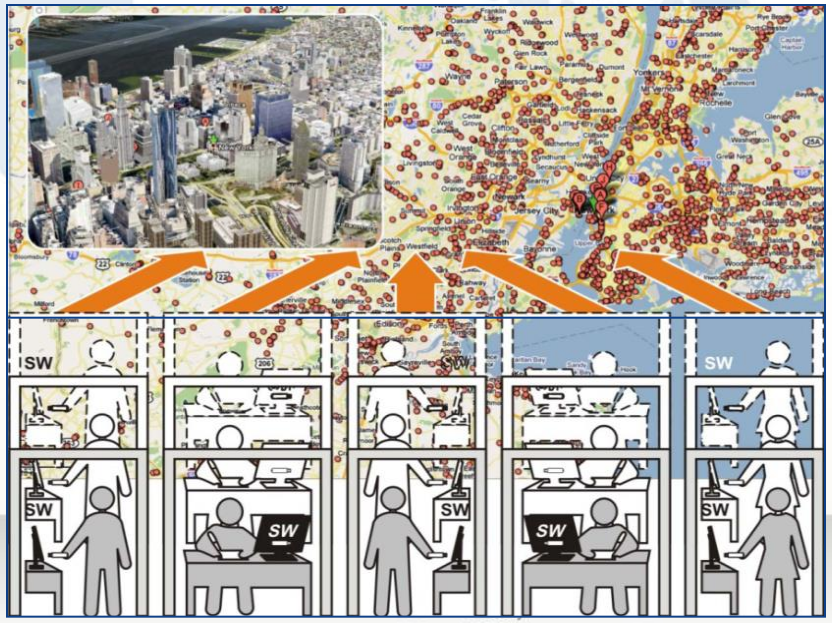
Member of Europan Nuclear Society

ISO 9001 Certified

RadFlash Radiation Monitor Software

Software enables online reading and display (graphically and digitally) of measured radiologic data from PM1912-RadFlash™ gamma detectors. Measurement data can be transfered to the Web server or displayed in Web mode and applied to Google Maps.

Software enables creation of a wide information monitoring system and simultaneous online display of measurement results from instruments integrated into the system.



Devices for public market - PM1904 & PM1905 – PoliSmart™II iPhone detectors

Ultraportable radiation detector with special software that connects to the iPhone.

- **PM1904** is the dosimetric detector – measuring dose and dose rate of gamma radiation.
- **PM1905** is the highly sensitive search detector.

iPhone's built-in GPS receiver and GSM/GPRS/3G module allow wireless data transfer to the common unified database installed on the Internet server.

Both private and public radiometric data can be displayed on Google Maps. Each PoliSmart user can monitor the radiation environment of a particular region in real time.

THE PROJECT

Polimaster develops and manufactures radiation detectors. Createch Group has long collaborated with the company and created a number of applications, including Polismart application. Polismart iPhone App is a professional, all-in-one solution for monitoring, detecting, locating and identifying nuclear and radioactive materials. The application provides detailed information on the current state and history of the detector readings and a wealth of additional parameters and settings to monitor the detectors.

Available on the iPhone
App Store

TRACK

The Track mode allows recording the movement of Radiation Detector PoliSmart and displays it on the map. The track's waypoints are added to the current track in accordance with predefined user conditions.

1. START TRACKING

After receiving the GPS coordinates tap "Record" to start recording your waypoints.

2. TRACKING

While moving, the application automatically creates waypoints after specific time period or distance.

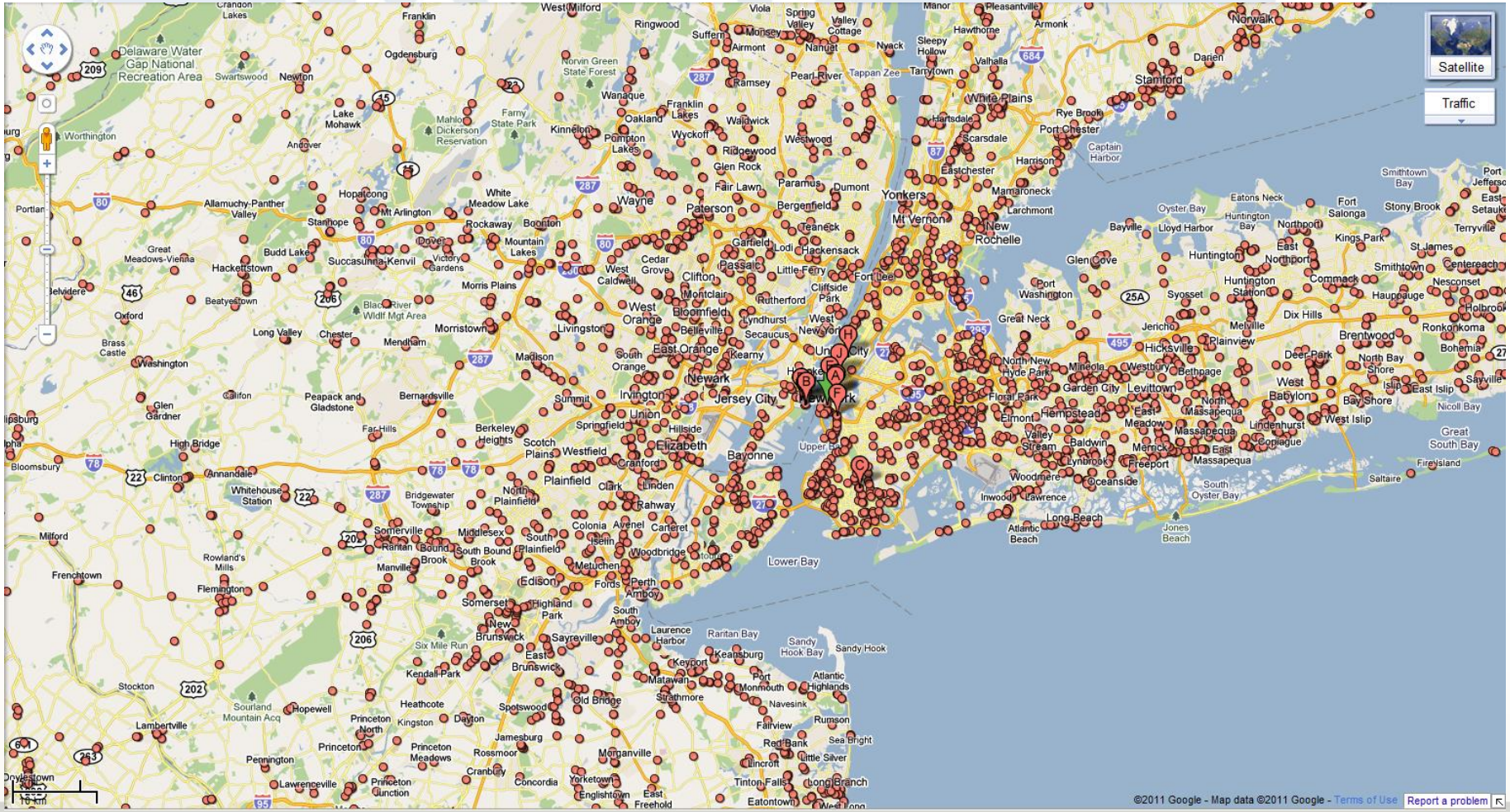
3. SAVE TRACK

Once recorded, user can save the track specifying name, date and time.

WORLD MAP

When connected to PoliSmart.net service, users can track radiation levels in real-time mode. Since all the devices submit data to the PoliSmart data center users can get information for particular area, city or even a particular street.

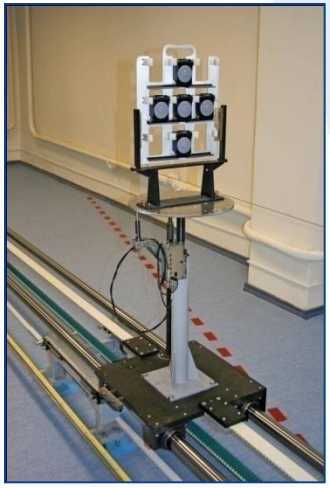
www.mypoli.com – Building a radiation awareness community

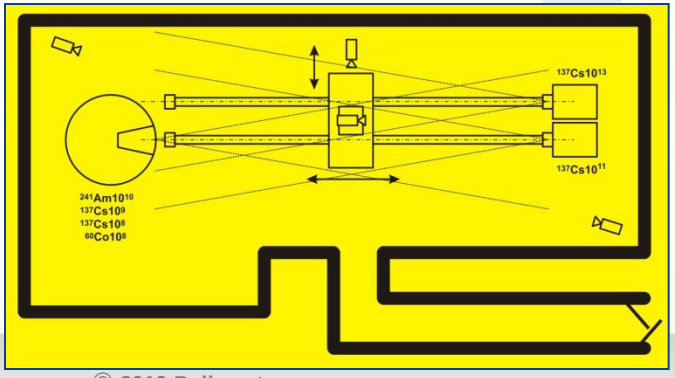


Member of European Nuclear Society

ISO 9001 Certified

Polimaster calibration equipment





PM9000 is used to check, calibrate, and/or test dosimeters, dosimetric instruments and equipment in a wide range of gamma radiation dose rate.

Instrument positioning along the collimated gamma radiation beam axis and the exposition of the required gamma source are done via remote control.

Irradiator with gamma radiation sources has sufficient radiation protection to ensure the standards of radiation safety and security are met.

Contraband detectors: PM1401T

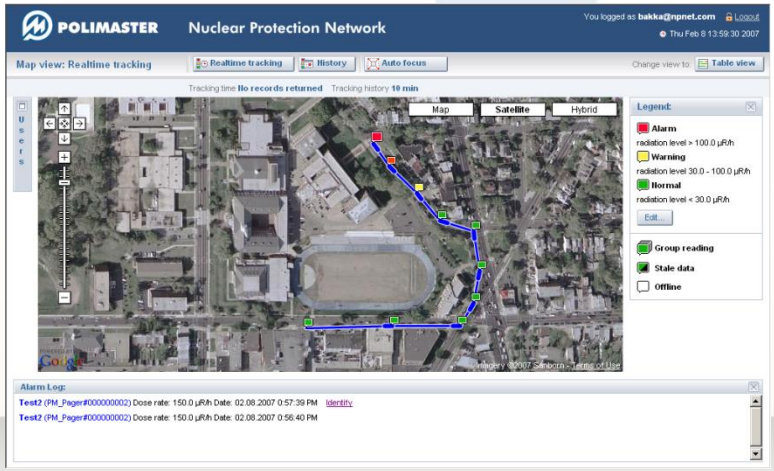
PM1401T contraband detector is a light-weight portable device that can detect the presence of hidden materials in concealed areas. The instrument detects backscattered radiation from a built-in ^{133}Ba source when the PM1401T is moved across an object. Backscattered radiation is detected by a highly sensitive CsI scintillation detector.

A hollow space that has been filled (for example, a car tire filled with contraband such as drugs or guns) reflects gamma rays differently than a non-filled space (such as an air-filled tire) or solid material (such as a piece of thick rubber). The PM1401T can easily detect density changes and alert users of the presence of contraband through visual, audible, and vibration alarms.

National Command & Expert Center

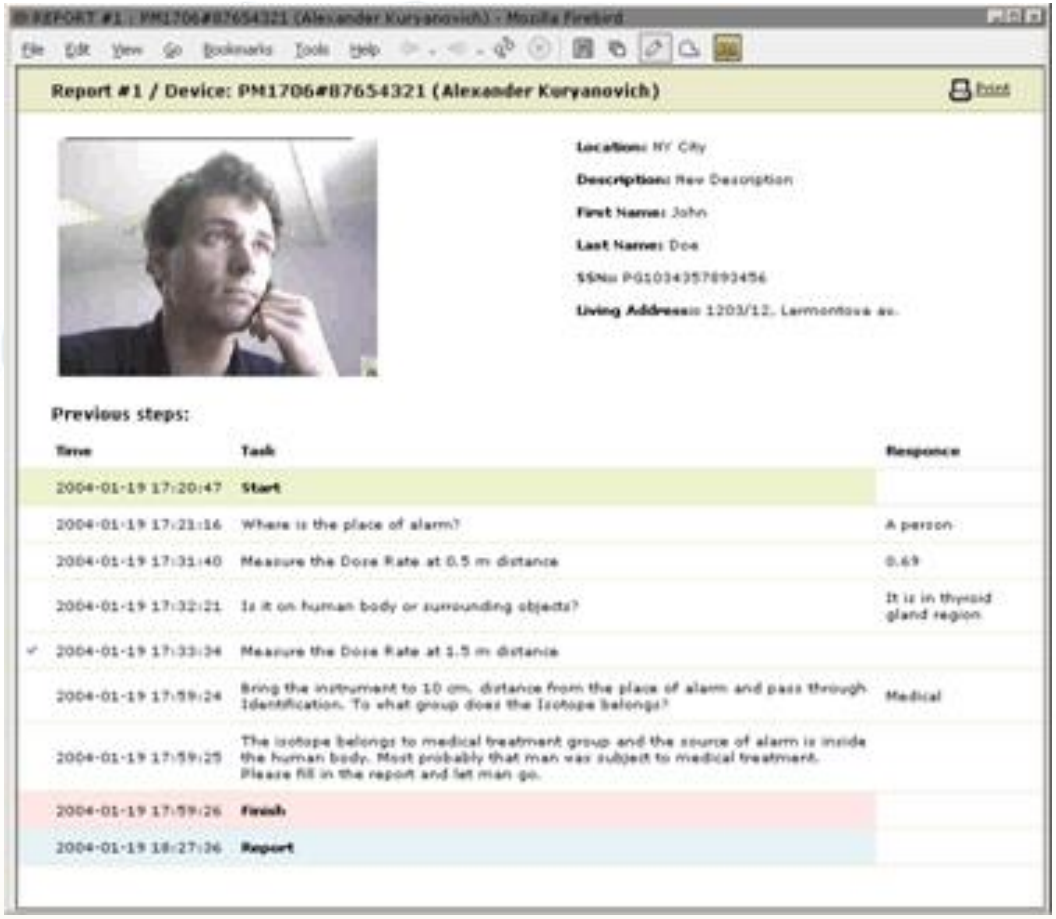
Polimaster NPNET™ - real-time geographical information system

- Deploy on any PC with access to the Internet
- Real-time information display
- Enables big-picture overview and assessment
- Administration of operator actions

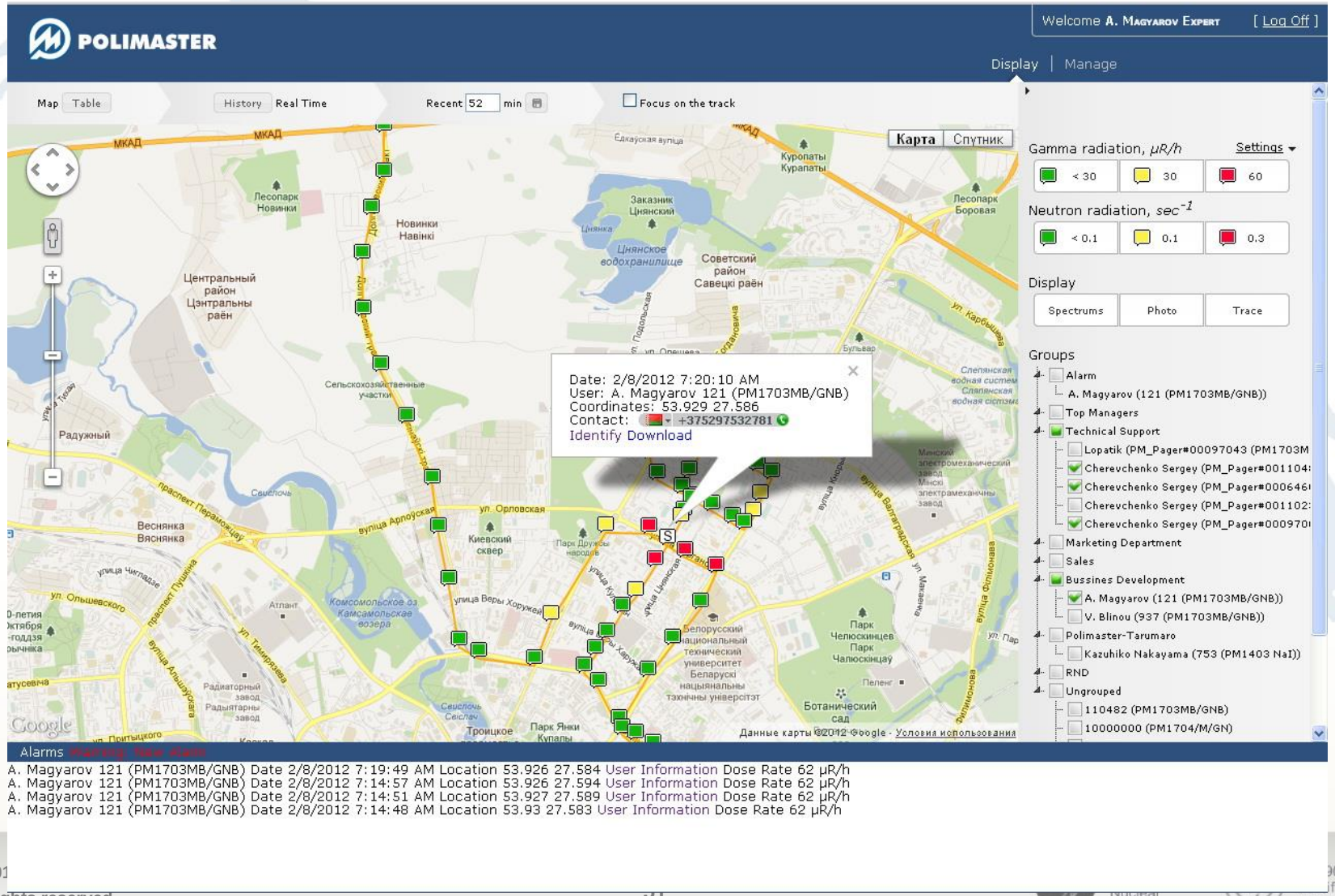


Decision support system

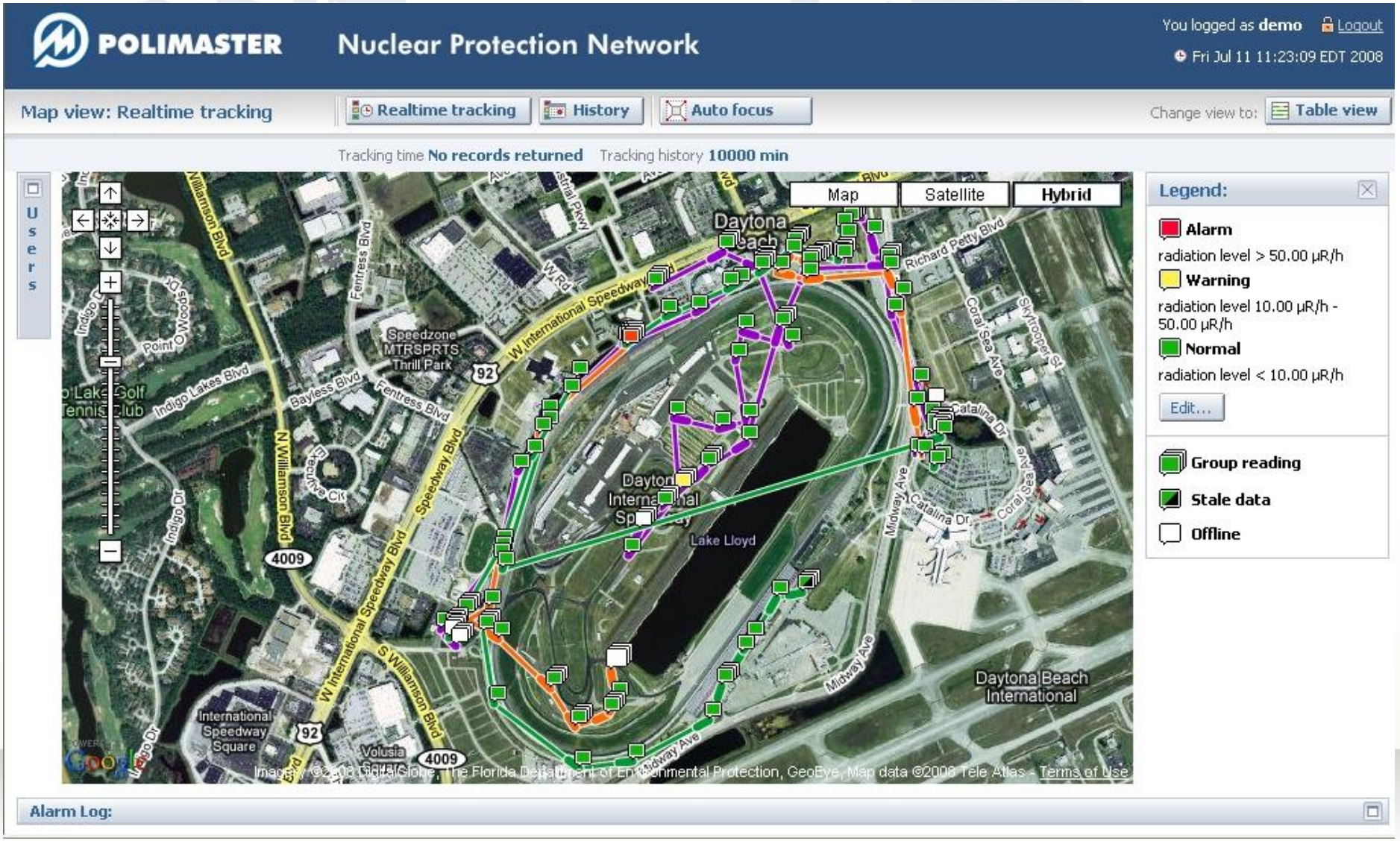
- Live expert support or Artificial Intelligence self-learning Expert System
- Designed to help first responders or any user when detector alarm is triggered
- Provides immediate on-line support
- Includes a decision tree.
- Produces automated reports



Online radiation monitoring: Measurements



NASCAR race in Daytona Beach, July 5th, 2008



Summary

Polimaster provides comprehensive radiation detection product line to Detect, Locate, Verify, Identify, Make Professional Decisions, Share Data

- Easily integrated into existing emergency communications networks.
- Rugged and dependable: designed to be used under severe environmental conditions.
- Quick fielding: can be used effectively by first responders.
- Easy to maintain: Polimaster can provide service and support of fielded equipment.

POLIMASTER®

Any questions?